

"When one begins a conversation, one cannot see the end."
African Proverb

The Titmouse Effect

By Jerry E. Fluellen Jr.
Coastal Georgia Writing Project
24 July 2007

Occasional Paper #3

*"Power Teaching in 2054"
Meditation on the Urban Sites
Conference of the National Writing Project
Washington, D.C.
21 April 2007*

How are National Writing Project (NWP) people like Titmouse birds? Ah, the stuff of analogy.

On the surface that inquiry seems strange. After all, NWP people, typically, are among the most accomplished educators in the land. But a story David Perkins told participants at the tenth Project Zero Research Center summer institute at Harvard University illustrates the comparison.

In the time of milk bottles delivered to the steps of English homes, a few Robins and Titmouse birds learned how to open the caps. While the Robins never spread the news, soon all over England, Titmouse birds were drinking early morning milk.

Participants at the 2007 Urban Sites Conference for the National Writing Project in Washington, D. C. (April 20 & 21), would soon take news about thinking, learning, and writing back to their respective sites.

The conference began with an astonishing keynote speech. Gloria Ladson-Billings highlighted her award winning research about effective teaching of African American students. Then, a round of four concurrent sessions added value to the information from Dr. Ladson-Billings. The conference ended with the annual town meeting in which participants shared reflections. Finally, the host site, namely, the District of Columbia Writing Project at Howard University, passed the torch to the Denver Writing Project at University of Colorado, host for the 2008 Urban Sites Conference.

The Titmouse Effect will have taken hold.

Background

Birds of another kind have been singing outside my Best Western window just before dawn, the day after.

60 miles south of the Renaissance Hotel in bustling downtown Washington, D. C., site of the conference, I think back to the session “Power Teaching in 2054,” my thoughts a samba with the birdsongs.

“What is power teaching?” one participant asked.

Her query probably had been running silently in the minds of most participants who braved the last session of the day instead of skipping out for cocktails or coffee.

James Thurber once ended a story with the words “simplest things last longest. The microbe outlived the mastodon.”

So it was with her question. Simple. Powerful.

I thought about my answer as well as what was missing.

Power Teaching was, after all, a new kid on the block—conceived in Washington, D.C. 2005. With a fellow Teacher Consultant from the District of Columbia Area Writing Project (DCAWP), I created standards-driven thinking classrooms. We served 135 students at MAC High School and implemented the Tishman, Perkins & Jay framework for thinking classrooms. Students ended the year by writing research papers and delivering research based power point slide shows in an interdisciplinary mini conference entitled “The Martian Village—2030.”

Concurrently, the district teachers I worked with were engaging a huge number of new initiatives at one time: new standards, new curriculum, new assessments, new text books, new top administrators, new vision from the school board, new mission and strategic plan from the new superintendent—all in about 18 months.

As a Teacher Consultant and former district Literacy Coach, I created the standards-driven thinking classroom to help other teachers connect the dots between district initiatives and presented the first prototype at the DCAWP regional conference.

Additionally, near the end of the year, two student representatives in the project presented views of the standards-driven thinking classrooms in the MAC high project at a regionally televised meeting of the District of Columbia Board of Education. They drew rare applause from the School Board Members and the Superintendent.

The first phase of my ministry had been completed.

Then, God sent me to the urban south charged to create the next generation standards-driven thinking classroom prototype, namely, “Power Teaching.”

With the power teaching prototype as a framework to generate an infinite number of instructional products (connecting standards, teaching for understanding, research based strategies for improving student achievement, and teacher inquiry), fifth graders in Seaside City engaged “Algebra and Analogies for Kids, a final project, and “Faces of Freedom,” a thematic unit involving a series of research projects on the lives and works of master artists (Maya Angelou, Jacob Lawrence, **Toni Morrison**, and Bob Marley. Their final project involved Boolean research on Toni Morrison and research based presentations on science fair boards displayed in the school media center as well as power point slide shows and story book weaver documents.

“The Dancing Mind: Toni Morrison, life and work” research project also yielded an electronic portfolio for each student who explored sample works from the Nobel Laureate for Literature, 1993.

Students became a community of scholars.

The power teaching prototype, for example, selected the most far reaching of the 5th grade, ELA standards to create a writing program that balanced narrative, informational, and persuasive texts as well as media literacy. It featured writing to learn activities such as KWL logs, Marzano's T-charts and steps for creating comparison, classification, metaphor, and analogy—all features of his “similarities and differences” strategy.

Also, it featured College Board's quick write strategy, Peter Elbow's free writing exercises in response to literature, and Houghton Mifflin's end of selection critical thinking-writing prompts.

Using a mix of these activities, students wrote to learn or reflect daily. They even wrote to publish a class anthology by the end of the year.

Additionally, writing to publish emphasized word processed works using Microsoft word, power point slide shows, and storybook weaver as age appropriate technologies; each one had created an electronic portfolio by the end of the year.

Finally, students addressed ELA power standards by using the Coach Book for Georgia's Criterion Reference Competency Test (CRCT) to facilitate workshops targeting the Georgia State Writing Assessment.

Drawing on power teaching as a framework for ELA (as well as other content areas), this inclusion class (eight special needs children including one bound to a wheel chair and paraprofessional, eight identified as low achievers on the 4th grade administration of the CRCT, and two so called “academy” children who had passed—a decidedly low achieving class on paper in a school with a 95% poverty rate—the students engaged thinking, learning, and writing.

In this first year of developing the power teaching prototype, results on the state writing test, however, were less than encouraging. Only two students wrote well enough to pass four traits measured. Simply put, in spite of the daily writing to learn and regular writing to publish activities, students were not well prepared for the persuasive, informational, or narrative topics they faced at random in the high stakes assessment.

The state had switched from a holistic scale to an analytic system measuring content, organization, style, and conventions. So the students needed more experience with the analytic scale and writing under pressure in response to basil-like topics as opposed to perfecting self selected topics over many drafts aimed at publication.

Those are two very different kinds of writing.

In the one case, students must pre-write, write, and rewrite in less than three hours. They may or may not have any information about the topic. Their products become assessed as is—as drafts.

In the other case, like real writers, they pre-write after a lot of knowledge gathering about their topic; write a hardcopy on a legal pad; get feedback from others (rubrics, facilitator and even peers). Then, the students word process several drafts and get a lot more feedback before publication. Such a process models the real world of writing as a craft perfected over time.

The former treats writing as subject matter. The latter treats writing as a discipline.

The next version of power teaching will balance both kinds of writing. It will take on the twin experiences of getting students to write in a laboratory fashion such as the state writing assessment as well as do what people who write do for publication.

In contrast, the Criterion Reference Competency Test (CRCT) had brighter results. On the 5th grade administration of the CRCT, the students performed as follows.

2007 CRCT Results for an Inclusion Class

| | | |
|--------------------------------|---|---|
| State Standard | Reading 800 | Math 300 |
| Class mean | Reading 799 | Math 290 |
| Standard Deviation = 17 | Difference of 1 point or less than one standard deviation | Difference of 10 points or less than one standard deviation |

Over half the class passed at least reading and/or mathematics. The range for the class was tight, and the mean scores for reading and math were less than one standard deviation from the state standard. Two of the passing students had among the highest CRCT scores of any in the 2007 class of 93 fifth graders. Five out of 18 students passed both of the critical decision tests and were, thus, promoted to 6th grade. The others were left to the summer program

for retesting. Both the class means for reading and math will increase as students complete the summer school program for retaking the CRCT reading and/or math administrations.

Over half the class scored two standard deviations higher than they did on the 4th grade administration even if they did not meet the state standard the first time.

Translation: students at the bottom of a standardized test might raise their scores a few points with hard work and sound instruction but seldom gain a standard deviation, let alone two standard deviations in just one year.

These students broke the norm of minimal progress by rising one and two standard deviations beyond their previous CRCT scores in 4th grade.

But from a research perspective, no causal statement can be made. The power teaching prototype itself speaks to the complexity of living systems with too many variables to control for an experimental or quasi experimental design.

However, while no causal statement about power teaching and the results on the CRCT can be made, it certainly raises a correlation question: What is the magnitude of the relationship between systematic implementation of power teaching and the CRCT?

Story of the four factors

Because part of my work in as a Literacy Coach involved training trainers of standards, I was in position to identify the power standards in Georgia as well as national organizations such as the National Council for Teaching Mathematics. And one of my professors at Howard University had taught me about the importance of culturally relevant pedagogy in her advanced graduate seminar on learning and cognition. So on the one hand, standards meant teaching the district or institutional, disciplinary framework for what students must know. On the other hand, standards meant teaching content that respects and mirrors the lives of the students.

Because I had served as an apprentice faculty member at Harvard's 1999 Project Zero (PZ) summer institute, "Views on Understanding," and studied in several other summer institutes, I was in position to have first hand knowledge about the teaching for understanding framework. Generative topic, throughline, understanding goals, understanding performances, and ongoing assessment were not just a new language, but a new paradigm instructional design. I spoke the language, fluently.

Because part of my interests had included Marzano's research based strategies, returning to the classroom enabled me to learn more about their power with real kids.

The instructional program in year one of the power teaching prototype highlighted Marzano's summarizing and note taking, similarities and differences, recognition and feedback—three of his nine strategies for improving student achievement—three with high effect sizes in the meta analyses research Marzano reported.

Finally, because I learned about teacher inquiry with one of its founders in the 1993 summer institute of Philadelphia Writing Project at University of Pennsylvania and served as a Spencer Foundation Fellow for teacher research in 1996 also at University of Pennsylvania, I was in position to see the value of reflective practice.

Examining student achievement, systematically, yields ongoing improvements in instructional delivery. That is a core belief of reflective practice.

Additionally, these four factors of educational reform (standards, teaching for understanding, Marzano's research based strategies, and teacher inquiry) usually stand alone in the literature. Yet, when viewed from a systems perspective, they appear to work as a whole.

Each factor has a history of research. Each one appears to be an invariant over the next 50 years. Each one seems likely to interact with the others on behalf of improving student achievement or, even yielding emergent properties beyond the properties of the parts.

Standards provide a focus for teaching in a way that fosters deep understanding of the discipline. The TfU framework offers a pattern to connect standards based disciplinary goals, performances of understanding, and assessments of understanding. Marzano's research based strategies provide multiple tools and specific approaches to help young scholars understand content within and across disciplines.

Teacher inquiry reflects on a specific problem related to instruction and provides insights about the whole in a way that improves acquisition of disciplinary knowledge and, thus, student achievement.

Thus, a short hand answer to the conference participant's query "What is Power Teaching?" is this: Power Teaching is like a patchwork quilt made of standards, teaching for understanding, research based strategies, and teacher inquiry--all stitched together to form a whole with properties none of the patches can achieve alone.

Power Defined

Such an answer draws intuitively from definitions of power. For this, the *Oxford American College Dictionary* proves useful. "The capacity or ability to direct or influence the behavior of others or the course of events," is the second definition for the word.

But that is obvious: Power Teaching intends to influence and direct how teachers and students learn.

Less obvious is the mathematical definition of power.

The Oxford says power is "the product obtained when a number is multiplied by itself a certain number of times."

Power Teaching explores the possibility that the four factors, once connected, might interact in a way that changes the course of learning events in a community of scholars, multiplying capacity by itself a certain number of times.

Roots in systems thinking

As a systems prototype--true to Peter Senge's assertion that a prototype helps us to work out errors and make continuous improvements--Power Teaching is the source for "graceful errors that correct the cave," as Richard Wilber puts it in his poem "Mind."

And as the factors interact, then power teaching becomes a source for surprises.

Well known is the fact that two parts hydrogen and one part oxygen, for example, combine to make water. Less obvious is that water has several emergent properties not found in the original elements including wetness—just as cake has a taste and texture quite apart from the eggs, sugar, flour, milk in its ingredients and sugar has a taste apart from its chemical elements.

Similarly, Power Teaching has combined factors that yield emergent properties not found in its four factors of educational reform. One obvious candidate emergent property is the capacity to pass high stakes tests, but a less obvious candidate is a psychological set of capacities: Howard Gardner's five future minds.

Emergent properties of power teaching are likely to become more evident as the prototype develops over time.

Interdisciplinary Problem

In just its tenth month of life, the power teaching prototype does not fully answer this question of how to develop five future minds. But an interdisciplinary problem providing context for the prototype itself serves as an ongoing source of insights and reflections that might one day lead to a full exploration of five future minds as an emergent property of power teaching.

By 2054, how might the average class in Seaside City Public Schools exemplify power teaching?

Howard Gardner and Veronica Boix-Mansilla shared findings from their research on exemplary interdisciplinary problems at “Views on Understanding,” the 2005 (10th anniversary) summer institute at Harvard University.

In their plenary session, they said exemplary interdisciplinary research had three characteristics:

1. use of two or more disciplines to search for solutions
2. depth of knowledge in at least one of the disciplines
3. solutions connecting two or more disciplines.

Dr. Boix-Mansilla adds a fourth in one of her papers. She says top interdisciplinary research problems must share the knowledge gained in its solutions. Such research aims at solving serious problems requiring publication to better the human species.

Providing sunlight for factors of the power teaching prototype and a framework for exploring the interdisciplinary problem are three disciplines:

- history (key events impacting on national education)
- psychology (teachable intelligence)
- future studies (research based ideas about the future)

History: Discipline one

At least four dates summarize the impact of events on the educational landscape of our nation: 1896, 1954, 1983, and 2014.

Plessey versus Ferguson did more than make it legal to provide “separate but equal” train cars in Louisiana. It became legal to use race as a factor for separate facilities in all walks of public life.

Racial segregation had already been in place around the nation in schools. Washington D.C., for example formed a school district for white students in 1805, shortly after the city had been granted a charter. Some 50 or so years later, the city government formed a separate district for black students.

The elite get one kind of education often in buildings that were attractive and clean. The non elite got another education—one meant for an underclass—often in buildings needing massive repair.

Our nation’s capital became a best example of segregation as cited in the actual 1896 Plessey V Ferguson decision, reasoning that if separate but equal had been good enough for the capital’s schools, it was good enough for Louisiana.

Arguably, it was the Plessey V Ferguson decision that helped spread the separate but equal belief into hardened practice in public and private life. Both its majority and minority opinions overtly used the language of white supremacy, paving the road to Jim Crow laws.

Of course, another contributing factor to these two-tiered phenomena may have been the industrial paradigm dominating thought at the time—one allowing for beliefs and values based on separateness of human beings. But segregation practices are easier to see than the paradigms behind them.

Finally, as Howard Gardner points out in his recent book *Future Minds*, the two tiered system had, at least, a two thousand year history leading to hardened practice.

Formal education began almost two millennia ago with religious leaders getting an education while the masses remained uneducated. Seven hundred years ago in China and Europe, says Gardner, selected individuals in addition to religious leaders earned education.

The Renaissance in Europe and inventions such as the printing press may have enabled the invention of public education in Massachusetts just about three centuries ago, but most people still did not learn to read or write.

Nowadays, in our nation, public education is mandatory, but few students learn to think, learn, and create—what John Naisbitt called the 21st century basic skills in his landmark work *Megatrends*.

Brown Versus Board in 1954 reversed the Plessey V Ferguson decision as it had impacted on public schools. Separate but equal had been shown to be untrue and unconstitutional. Equality through racial integration became the law of the land. However, as the National Association for the Advancement of Colored People decreed at its annual convention in 2004, the 50th year of Brown Versus Board of Education—the ideals of the decision were far from a reality in our nation’s schools as well as other segments of public life. Add to that the present: 2007 Supreme Court justices have been deliberating a case that may impact on whatever gains Brown Versus Board afforded in education. History will tell.

1983, the same year Howard Gardner released his breakthrough book on multiple intelligences, the *A Nation at Risk* report from the United States Department of Education made it clear that the nation’s schools had not been working for black and white students alike. We were providing an adequate education only for the new elite students, leaving masses of children behind.

The No Child Left Behind Act of 2002 put much of the work of previous presidential administrations into law with teeth. But the impact of the act may not be understood until sometime after its end in 2014. At that time, its degree of “flatness” in excellent education will become clearer and have, at least, some historical perspective.

By 2014, historians may have addressed the following:

- Will we have created a citizenry with enough scientific and mathematical knowledge to take on higher order studies in college and graduate schools—well rounded people who will fill our need for innovators fueling our global economy?
- Will we have created a citizenry with five **future minds** fully developed during their time in school and work?
- Will we have flattened the two-tiered educational system to provide widespread quality education for all?

Psychology offers hope.

Psychology: Discipline two

While the field of intelligence began life in psychology over 100 years ago and contributed much to two-tiered educational practices based on reified views of intelligence, in the last 25 years a family of theorists have been creating a counterpoint—teachable intelligence.

The old paradigm view of intelligence, in brief, argues that people are born with an IQ score, No matter what parents, teachers, or coaches do, the score changes little from cradle to coffin.

But Howard Gardner's multiple intelligence theory (1983) argued that the psychometric view of intelligence was inadequate to describe human capacities across cultures. Nor did it capture human potential. His multiple intelligences theory said human beings had seven to nine intelligences that could grow across a life time with teaching, coaching, and experiences. Gardner broke the zero sum view of intelligence, replacing it with a theory suggesting plenty.

Children could now be seen as “at promise” instead of “at risk.”

Gardner's view becomes extended in the teachable intelligences theories of Robert Sternberg, Ellen Langer, and David Perkins. Though their theories appear different on the surface, at the deep structure level they are powerful counterpoints to the long held belief that human beings were born with a static IQ score.

The new paradigm view of human intelligence suggests that schools can do a great deal to put every child ahead.

Future Studies: Discipline three

Finally, the third discipline currently minded for insights about power teaching, is the future studies field. Of particular note, are the research based works of John Naisbitt, Peter Senge, Thomas Friedman, and Fritjof Capra. They envision a future in which the network of education in our nation nests within a larger network.

And power teaching, of course, nests within the nest of the network of education.

Before summarizing visions from these four thinkers, it may be valuable to explore human potential from a longer now.

Professor Dobson, a fictional character in James Redfield's spiritual adventure novel *Celestine Prophecy*, tells the main character to take the longer now view in order to understand any present event. He suggests that people look to the last 100 years. For example, in the last 100 years, psychology struggled to be like physics and find the laws of human behavior. It venerated only tightly controlled laboratory studies.

Psychology became less and less able to take on higher order questions not easily controlled for validity and reliability.

For example, Gardner's view of intelligence exceeds the limits of controlled studies so many psychologists rejected it as nonscientific rather than accept its possibilities.

Just as physicists rejected Einstein's theory of relativity because it defied the "truths" of Newtonian physics, many psychologists refuted Gardner's view of human potential, just as Gardner himself had initially debunked canonical views of intelligence.

But as Gardner's mentor Jerome Bruner pointed out in *Acts of meaning*, psychology for a long time psychology had gotten away from examining questions about human behavior that mattered most to a deeper understanding of human beings.

That had been the last 100 years.

What Professor Dobson missed was that a longer now might really mean plus or minus 100 years, and from the standpoint of human evolution's development of the prefrontal lobe, plus and minus 100,000 years.

That plus or minus 100,000 years is useful for seeing how the early human beings in Africa evolved to a world wide species that has already seen several improvements in finger dexterity, language, and prefrontal lobe power. For the next, 100,000 years the stuff of human evolution becomes envisioned in science fiction works such as the *Dune* saga. The triune powers are already greatly extended in the promise of nanotechnology, digital electronics, and high speed computers.

In real time, however, the late Japanese thinker Yoneji Masuda envisions the evolution of *Homo sapiens* into *Homo intelligens* in just 10,000 years or so. *Homo intelligens* may be able to live in harmony, serving as planetary stewards and deep ecologists.

So the next 1,000 years of psychology might take on more complex questions. That is already evident in the teachable intelligence theories of Gardner, Sternberg, Langer, and Perkins. More recently, brain research informs new insights about how to teach better, and Joseph Chilton Pearce's heart intelligence theory may take its place among the first theories about human potential to be based on brain research.

In the next 100 years, the sum of new ideas about educating human beings may show up in actual practice throughout our nation's public schools.

One of my core beliefs in the last ten years has become the following: each child has a set of multiple intelligences. Each child's profile of intelligences can grow naturally and without limits if the instructional program is designed to develop these potentials. That is what I learned from Howard Gardner in a nutshell.

Another equally powerful core belief of mine has become David Perkins' view of teachable intelligence.

He says people have three intelligences that interact:

- native endowment
- experiential
- reflective

Native endowment is the hardwired baseline people are born with as measured in IQ tests. That represents the canonical idea about intelligence in the discipline of psychology.

But experiential intelligence says people can encounter experiences that improve their native endowments. That represents an enhancement of the canonical view.

Even more profound, people can reflect on their experiences and, thus, over time significantly increase native endowment. That additional layer in David Perkins' theory breaks with cannon and speaks to Power Teaching.

Because reflective intelligence is systematically woven into the fabric of Power Teaching along with a deliberate effort to use instructional approaches and assessments that develop multiple intelligences, the whole learner grows.

Students become more than what they were.

Tomorrow's Schools

John Naisbitt offers ideas that help to envision the next 100 years. His megatrends include the ever more obvious fact that we have become an information society. Today more people make money with ideas than with their backs. Today most new jobs and fields are in the information sector of the economy.

Schools for an information society, then, must differ from schools created for an industrial society. In his view, 21st century schools do not throw out the basic skills of reading, writing, and arithmetic; they encompass them within new basic skills, namely, thinking, learning, and creating—TLCs of tomorrow.

Peter Senge draws a parallel to Naisbitt's view in his Schools-that-Learn research.

With 25 years of studying how top businesses become learning organizations, Senge et al at MIT have applied his "fifth discipline" approach to schools that learn. These are decidedly new paradigm schools for an information age.

Such ideas counter, in Senge's view, long held industrial beliefs about schools:

- "Children are deficient and schools fix them."
- "Learning takes place in the head, not in the body as a whole."
- "Everyone learns, or should learn, in the same way."
- "Learning takes place in the classroom, not in the world."
- "There are smart kids and dumb kids."

With Senge's information age ideas in mind, Power Teaching intends to create information age beliefs.

- Children are at promise in at least one and often several of Gardner's multiple intelligences and schools enhance them.
- Learning takes place in the head, heart, and whole body.
- Everyone learns but not in the same way.
- Learning takes place in the classroom and extends to the world, and reflective intelligence creates the extensions.
- All kids are smart and can get smarter over time; they can develop Howard Gardner's five future minds.

Thomas Friedman's research led to his belief that the world is flat. Metaphorically speaking, Friedman sees ten forces that spread the world's economy, giving it a less two-tiered reality. In Friedman's view our nation has not been keeping pace with the flattening of the world. Our science and mathematics programs will not yield the numbers needed to sustain our present edge in innovations, and innovations are most likely to drive global economy in decades to come.

By 2020, he predicts that our nation will have a critical shortage of prepared professionals and be unable to buy talent from other countries the way we have been.

Fritjof Capra has articulated much of the work on paradigm shifts in a series of books narrating the change.

In "web of life" his theory of complexity, he extended Thomas Kuhn's definition of paradigm from "a constellation of achievements—concepts, values, techniques, etc.—shared by a scientific community and used by that community to define legitimate problems and solutions" to the societal level. For Capra, paradigm means "a constellation of concepts, values, perceptions, and practices shared by a community, which forms a particular vision of reality that is the basis of the way the community organizes itself."

In brief, he argues that ample evidence shows the era in which we live is changing from the Newtonian paradigm to the ecological paradigm.

The ecological paradigm has specific characteristics including the following. As Dr. Capra says, the paradigm shift is from

- Old values to new values
- Power over to power with
- Self assertive to integrative
- Hierarchical to networks
- Material to spiritual
- Physics as the epitome of research to life science
- Shallow ecology to deep ecology

Most particularly, the ecological paradigm is a systems view of the world.

According to the systems view, the essential properties of an organism or living system are properties of the whole, which none of the parts have. They arise from the interactions and relationships among the parts. These properties are destroyed when the system is dissected, either physically or theoretically, into isolated elements, although we can discern individual parts in any system, these parts are not isolated, and the nature of the whole is always different from the mere sum of its parts.

Capra concludes that “the emergence of systems thinking was a profound revolution in the history of Western scientific thought.”

Note that a new paradigm does not throw out the old one; instead, it adds new beliefs and values never before seen.

Hunting gathering societies did not die when farming societies evolved. Goods making societies still kept hunters and farmers. Idea making societies kept hunters, farmers, and factory workers. But in each new stage of evolution new beliefs and values became dominate after long conflicts with the previous dominant paradigm.

Right now the pendulum swings back and forth between the Newtonian world of certainty and analysis to the ecological world of complexity and synthesis—a paradigm shift in progress.

Living through such an era of deep change is like the Chinese curse: “May you live in interesting times.”

For me, however, these interesting times are more of a Chinese blessing than a curse, more of an opportunity than a problem.

Finally, Joseph Chilton Pearce expresses the new paradigm side of this pendulum in a more colorful way. For Pearce, individuals (and civilizations) create “cosmic eggs,” the sum statistical beliefs about the world. But someone can create a “crack in the cosmic egg” the way Einstein did. The crack, once explored, in time, leads to a new cosmic egg.

In all, the interdisciplinary problem, still in exploration with the three disciplines, provides a deep structure, contextualizing Power Teaching. So the more extended answer to the conference participant’s question becomes the following.

Power Teaching connects four factors of educational reform in a way that creates an interaction. When standards, teaching for understanding, research based strategies for improving student achievement, and teacher inquiry interact, emergent properties occur to enhance human capacities beyond the individual factors alone. Set in the context of an interdisciplinary problem explored with three disciplines (history, psychology, and future studies), power teaching aims to provide a new paradigm view of education in real time with real kids. It may be a "crack in the cosmic egg."

Scenarios

Now it becomes possible to draft tentative scenarios to describe best, worst, and probable futures of education in Seaside City Public Schools as well as to examine what was missing from my Urban Sites session response to what is power teaching?

Joseph Coates offers an approach to scenario writing that can be useful here.

Since scenarios tell about possibilities, they embody one of John Naisbitt's insights in his recent book on understanding the future. In *Mindsets* he says "you don't have to be right."

Scenarios in the Coates mode are not forecasts. Rather, they are possible futures enabling us to decide what future to work for and not be worked by. In other words, as educators, we can choose the future of schools or just let the future happen.

We can be empowered or remain powerless.

When we turn attention to Seaside City Public Schools by 2054, best, worst, and probable scenarios highlight the choices.

Set down in an email to NWP people in 2054, three scenarios emerge.

You've Got Mail

From: jabez@aol.com

To: NWPpeople@aol.com

cc: educators@seaside.city.k12.us

Subject: power teaching in 2054—best, worst, probable scenarios

Attachment: scenarios about Seaside City district 2054

Peace be with you, National Writing Project people. Attached please find best, worst, and probable draft scenarios drawing from the interdisciplinary problem I have been researching.

Recall that I posed in my session at the 2007 Urban Sites conference the following: "By 2054, how might the average class in Seaside City Public Schools exemplify power teaching?"

Note that as new ideas come from my ongoing exploration of history, psychology, and future studies, the scenarios will change.

Like a kaleidoscope, new patterns will form whenever we tap the glass a bit, but the primary colors will remain.

Attachment

Best Scenario

By 2054, the average class in Seaside City Public Schools exemplified power teaching. Einstein said it best: "A problem can not be solved at the same level as when it began."

The two-tiered system of public education had long kept the district from reaching its meta goal of becoming a "world class" system. Four decades or so after news of power teaching had spread through the National Writing Project, thus, empowering the Coastal Georgia Writing Project, a critical mass of schools transformed the district.

Seaside City Public Schools looked a lot flatter. Excellence characterized the system. All children gained an education for power and consequence. The district put all children ahead, taking the time to develop in each child all five of Gardner's future minds.

Typically, the district's graduates had disciplined minds, synthesizing minds, creating minds, respectful minds, and ethical minds.

Worst Scenario

By 2054, the average class in Seaside City Public Schools still clung to industrial age practices. Einstein said it best: “A certain sign of insanity is to do the same thing over and over while expecting different results.”

Firstly, the district failed to create a strategic vision. Thus, it created a series of mixed messages represented as an incoherent professional development plan and a slew of “non-negotiables” that choked the most creative teachers in the district.

Secondly, it essentially did not establish itself as a “learning organization” in the Senge sense, so the policies and practices it fostered never took on an inquiry perspective.

The district kept repeating the mistakes of mechanistic thinking, and thus, re-segregation calcified and plantation practices held in place a two-tiered system in spite of new paradigm developments in the National Writing Project and selected districts in the nation.

Probable Scenario

By 2054, the average class in Seaside City Public Schools still used a mix of information age and industrial age practices. Paradigm shifts take a while. The nation had learned from the failure of NCLB by 2014. So the Intelligence Act of 2020 became first legislation in history to foster the systematic development of teachable intelligences and future minds across the nation’s schools. In turn, that led to districts becoming power teaching schools standing on the bedrock of teachable intelligence theories and the development of five future minds. These power teaching schools solved the problem of assessing children on high stakes tests and performance assessments across time and stored portfolios of student works electronically with the technology of the day. Most importantly, they produced a critical mass of citizens with disciplined minds, synthesizing minds, creating minds, respectful minds, and ethical minds—people able to deal with increasingly complex global problems of life. But it would take another 50 years before a critical mass of such citizens began to transform the Seaside City district and live up to the ideals of Brown Versus Board of Education, 1954.

In all, four factors of educational reform (standards, teaching for understanding, research based strategies, teacher inquiry--seamlessly stitched together), emergent properties, an interdisciplinary problem, three disciplines, and scenarios provide an extended definition of power teaching.

Missing in action

But what was missing from my answer to the question “What is power teaching?”

In a three word sentence: educate to liberate.

Or in the more colorful language of Bob Marley:

“Emancipate yourselves from mental slavery; None but ourselves can free our minds.”

Educate to liberate.

Starhawk, an eco-feminist writer, spells it out in her novel *The Fifth Sacred Thing*. In this work, she says God gives us sun, rain, wind, and water in abundance and for free. He gives us spirit as well.

The fifth sacred thing, namely, the human spirit can create an education that liberates other humans once held in the bonds of Newtonian thinking. That becomes the soul of power teaching—nothing less than the planetary stewardship involved in Capra’s ecological paradigm, providing an education that accomplishes the challenge W.E.B. DuBois put before readers in his 1918 essay “Negro Education.” DuBois said, children must “learn the accumulated wisdom of the world.”

Power teaching liberates teachers.

Because the prototype is generative, a teacher might create a set of approaches for teaching and learning that range from making store bought programs better to designing original projects and assessments.

The prototype for the 5th grade class exemplifies both. Take the two final 2007 projects, for examples.

“Algebra and Analogies for Kids” connected NCTM standards, teaching for understanding with Howard Gardner’s new paradigm instructional design theory (the MI approach) for day to day workshops and the teaching for understanding framework for writing lesson plan booklets for each month), selected research based strategies from Marzano (summarizing and note taking, similarities and differences, recognition and feedback), and teacher inquiry—how do children display analogical thinking in a 5th grade algebra program?

Faced with the systematic inattention a public arts magnet school in Seaside City had given algebra and resources for teaching math, the facilitator designed a project that made the store bought texts better.

For example, the facilitator first identified the National Council of Mathematics standards for algebra, then, used Harvard University Project Zero’s teaching for understanding framework to design a plan. Gardner’s entry point, powerful analogy, and multiple representations gave each learner activities in several of his multiple intelligences in each algebra workshop. Systematic use of thinking routines including Marzano’s T-chart for note taking and summarizing strategy, David Perkins’ knowledge as design critical thinking method often as an advanced organizer for math topics, and end of workshop reflection questions became part of thinking, learning, and writing in mathematics.

Thirdly, the facilitator identified two of Marzano’s most powerful strategies for improving student achievement and applied them to the day by day instructional program represented in algebra workshops. Students summarized algebraic ideas; they created analogies.

They engaged performance assessments such as the final one requiring them to demonstrate an understanding of “equation.”

Each student had to write a word problem from their observations of a painting by Jacob Lawrence. Next, the student had to draw icons or counters to represent the word problem. Finally, each one had to design an equation to summarize the answer to his or her word problem in symbols (letters and/or numbers)

Advanced students were encouraged at the end of the assessment to explain an analogy (block is to number as symbol is to variable) or create an original analogy about algebra. They were free to evaluate the analogy, telling why and how it made sense or why and how it did not make sense. Or they could create an analogy from some algebraic ideas they had learned.

Lastly, the facilitator created a plan to study a teacher inquiry beyond the pilot project, i.e. the students in 2007-2008; they will encounter “Algebra and Analogies for Kids” all year.

Power teaching will have made the store bought program better.

Likewise, “The Dancing Mind: Toni Morrison, Life and Works” likewise connected the four factors of power teaching in a teaching for understanding plan. It was an original curriculum idea.

Generative topic

“The Dancing Mind: Toni Morrison, Life and Works”

Throughline: “All learning integrates thinking and doing.” Peter Senge et al

Understanding goals

1. **How might each learner use the writing process to create proficient narratives? (based on the models presented in Toni Morrison’s Who’s Got Game books and ELA power standards for reading, writing, and media)**
2. **How might learners connect thinking, learning, and writing?**

Understanding performances

1. **Learners read widely and deeply with specific strategies for comprehending such as summarizing and note taking, similarities and differences. (See Marzano’s research based strategies for improving student achievement.)**
2. **Learners write to learn and write to publish.**
3. **Learners dance with minds.**

Ongoing assessments

1. **Facilitators observe the quality of each learner’s thinking daily using the four tools of assessment (observations, documents, portfolios, and performances) and often provide feedback.**
2. **Learners provide feedback to each other and the facilitator.**
3. **Marzano’s rubrics (product and process) frame most of the feedback along the lines of demonstrating deep understanding of narrative writing.**

The teacher inquiry for this project is this: how do students display analogical thinking in original narratives?

Power teaching liberates students.

Take for instance a set of lessons for the last Toni Morrison book children studied in the project, namely, *Who's Got Game: Ant or Grasshopper?*

Because students had experienced a significant sample of Toni Morrison's works (Internet searches about Toni Morrison; 10 dramatic readings from *The Bluest Eye* and free writing responses to the passages from her novel; a KWL of *Remember: A journey to school integration*; dramatic readings of *Poppy* or *Snake* including a creative dramatics exercise to act out events, a web of story elements including the advanced literary idea—flashback—a television story board sketch, its full scale reproduction, and storybook weaver software for a publication draft; they had a lot of information. That showed up in the collective KWL for *Who's Got Game: Ant or Grasshopper?*

Following the KWL work, 100% of the students created television storyboards of the Morrison book in a 90 minute workshop. These intellectual products blended words and pictures summarizing *Who's Got Game: Ant or Grasshopper?*

Or in the case of a few of the special needs students, the summaries were pictures. In the case of more advanced students, the TV storyboard on full scale art paper transformed into story board weaver with word processed texts and computer generated pictures.

Without resolution, Toni Morrison's offered a basic conflict between Foxy Grasshopper and Kid Ant in her book.

Ant quits the summer fun of shooting hoops and hanging with Grasshopper in the park. But as the winter dawns, Ant goes back home, leaving Grasshopper in the park where he creates deft music for crowds.

When summer has turned to snow, Grasshopper's cardboard box can't keep out the cold and the crowds have faded to black.

Frozen and hungry, Grasshopper goes to his friend's house for food and shelter.

Ant had been working hard around the house, grooving to Grasshopper's music playing on the radio. But he rejects his friend because instead of working to store food and firewood, he played.

Grasshopper goes back to the park in despair after he made it clear that creating music was his work.

Who's got game? Ant or Grasshopper?

Students in an inclusion class got to know success beyond high stakes tests, and Peter Senge's words had become a mantra in the class: "All learning integrates thinking and doing."

Power teaching liberates administrators.

Because power teaching takes on the challenge of passing high stakes tests as well as aiming high to hit Gardner's five future minds, it liberates administrators, freeing them to foster power teaching across grade levels comprising their school, and setting them squarely in a new paradigm mode for 21st century schools. The administrators become part of team—all in the business of improving student achievement.

To achieve the five future minds, for example, means to fit these brief descriptions:

First, the disciplinary mind demands understanding major schools of thought including science, mathematics, literature, and history) and of at least one professional craft" such as writing. Toni Morrison does that.

Next, the synthesizing mind integrates ideas from the different disciplines into a coherent whole and communicates that integration to others. That is the same as interdisciplinary thinking. Howard Gardner does that.

Thirdly, the creating mind is the "capacity to uncover and clarify new problems, questions, and phenomena." Einstein did that.

Then, the respectful mind involves the "awareness of and appreciation for differences among human beings." M. L. King Jr. did that.

Lastly, the ethical mind deals with the "fulfillment of one's responsibilities as a worker and a citizen." President Carter does that.

Gardner argues that these minds are what schools must develop given the complexity of 21st century, global problems and changing times.

Thus, the Power Teaching prototype educates to liberate teachers, students, and administrators.

In brief, Power Teaching empowers.

Toni Morrison's "The dancing mind," an acceptance speech on the occasion of her National Book Foundation Medal for Distinguished Contribution to American Letters, frames the final point on power teaching. Thus, in conclusion to her speech and this meditation, she offers these words.

I have always doubted and disliked the therapeutic claims made on behalf of writing and writers. Writing never made me happy. Writing never made me suffer. I have had misfortunes small and large, yet all through them nothing could keep me from doing it. And nothing could satiate my appetite for others who did. What is so important about this craft that it dominates me and my colleagues? A craft that appears solitary but needs another for its completion. A craft that signals independence but relies totally on an industry. It is more than an urge to make sense or to make sense artfully or to believe it matters. It is more than a desire to watch other writers manage to refigure the world. I know now, more than I ever did (and I always on some level knew it), that I need that intimate, sustained surrender to the company of my own mind while it touches another's..."

Power Teaching invites all to dance with minds.

* * *

Annotated bibliography for thinking outside the box

Akbar, A. (1998). *Know thy self*. Tallahassee, Florida: Mind Productions and Associates. **A vital counterpoint to the Anglo Saxon values dominating much of psychological thought and Western society, this book offers a three-fold cord for liberation of African American people. The author argues that African Americans must define the self in positive terms, create a legacy of competence (images of African Americans who are or have been achieving), and develop a shared vision of our possibilities, individually and collectively.**

Andrews, D. ((2000). What brain research has to tell educators: Mandates and metaphors. ED412 073

A review of recent research from the neuropsychological field vis a vis educational applications, this author argues that brain research be best viewed for themes, metaphors and mandates for educators. He warns that specific classroom application from brain research are unsound, but metaphors such an active learning develops the brain offer rich applications for instruction and assessment.

Blythe, T. (1998). *The teaching for understanding guide*. San Francisco: Jossey-Bass. **A practical entry into the teaching for understanding framework emerging from research and practice at Harvard University Project Zero Research Center and classrooms around the world, this guidebook instructs readers in each of the components to the framework.**

Brand, S. (1999). *The clock of the long now: Time and responsibility*. New York: Basic Books.

If a clock that rings every one thousand years and has a big gong in 10,000 years might serve as a powerful metaphor for long-term thinking. That is what Brand his colleagues hope for: a way of involving humankind into a longer now: plus and minus 10,000 years as a way of seeing our present circumstances on Earth.

Briggs and Peat. (2000). *Seven life lessons of chaos: Spiritual wisdom from the science of change*. New York: HarperTrade.

In addition to spiritual insights, the work is valuable for its explanation of paradigm shifts: from 800 years of mechanistic thinking to the emerging holism inherent in chaos theory.

Bruner, J. (1996). Culture, mind, and education. In *A culture of education*. Cambridge, Massachusetts: Harvard University Press.

Explores a plethora of educational issues including the creation of works (oeuvres) as a major purpose of culture and thus education.

Capra, F. (1982). *Turning point: Science, society and the rising culture*. New York: Bantam Books.

Extending Thomas Kuhn's word paradigm, this book argues that paradigm refers to the sum of beliefs and values of a whole civilization. More so, as the argument goes, a new paradigm is emerging to replace the Newtonian one that has dominated Western Thought for at least 400 years. This ecological paradigm offers new insights and perspectives about human life on Earth.

_____. (1996). *The web of life*. New York: Anchor books. **A theory of complexity to explain the interconnections in life that seemed to be separate from the perspective of the Newtonian paradigm, this book begins a whole new way of seeing across many fields including the development of a nonlinear model for literacy and a program to provide a context for developing literacy—the thinking classrooms.**

_____. (2002). *The hidden connections: Integrating the biological, cognitive, and social dimensions of life into a science of sustainability*. New York: Doubleday. **This book extends the theory of complexity born from an ecological paradigm to an explanation of macro global problems from economy to ecology. A major synthesis of the author's previous works, the particular theory of complexity presented connects ideas about the nature of life, mind and consciousness, and social reality into a coherent whole. Then the author applies the whole theory to an examination of global issues.**

Capra, F., Steindl-Rast, D. & Matus, T. (1992). *Belonging to the universe: Explorations on the frontiers of science and spirituality*. New York: Harper San Francisco. **Among the first books in the world to cite defining characteristics of a new paradigm in science and spirituality, this book explains the ecological paradigm in more detail and compares to the Newtonian paradigm that has dominated Western thought the last 400 years since Newton, Descartes et al.**

Chang, K. (2004). Ideas and Trends. *The New York Times* October 24. **An argument about the way a mathematical equation can explain precise relationships among variables.**

Chomsky, N. (2005). *Government in the future*. New York: Seven Stories Press. **Challenges citizens to eliminate repressive and authoritarian institutions, state and private.**

Fabermen, B. and Musina, R. (2004). Picturing the concepts: An interactive teaching strategy. *Thinking Classroom: A Journal of the International Reading Association* 5 (4) 12-16. **Provides a strategy for envisioning ideas, thus, giving students with high visual spatial intelligence an entry into thinking well.**

Fluellen, J. (1996) Developing mindful learners' model: A 21st century ecological approach. ED403020. **One of the first published efforts to connect Ellen Langer's mindfulness theory, Howard Gardner's multiple intelligences theory, and Capra's ecological paradigm.**

_____. (2002). Teaching for Understanding: The next 100 years. Paper presented at the 24th Education and Ethnography Forum at University of Pennsylvania. ED467 519. **Exploring three-layered view of teaching for understanding, the author connects Howard Gardner's MI approach, Harvard University Project Zero Research Center's teaching for understanding framework, and Piaget's reflecting abstraction model as a theoretical explanation of what it means to understand. The paper ends with best, worst, and probable scenarios about how teaching for understanding might fare in our nation's schools over the next 100 years.**

_____. (2006a). Convergence. ED490417

Among the first papers in the intelligence field to see how a family of new ideas have been forming a second wave. The first wave of theories about intelligence had been the psychometric view. This wave said intelligence was innate and remained about the same over a life span. The second wave included Howard Gardner's multiple intelligences theory, Robert Sternberg's triarchic theory of intelligence, Ellen Langer's mindfulness theory, David Perkins' learnable intelligence theory, and ideas emerging from brain research as a pre-theory. This wave said intelligence could change over a life span, given teachers, schools, parents, experiences, and reflections. The second wave can be called "teachable intelligence." One of the three scenarios at the end of the paper introduces the possibility of a third wave emerging from African psychology sometime in the next 100 years.

_____. Creating a culture of thinking in DCPS: A generic proposal for the District of Columbia Board of Education. ED590752

Serves as a rough draft for power teaching.

_____. (2006b). Words for the mind: Analysis of a language of thinking. ED490719

First of a series of occasional papers exploring thinking classrooms, a possible emergent property of power teaching.

_____. (2006c). Think to learn. (Creating a standards driven thinking classroom)
ED493473

Explores Robert Sternberg's thinking classroom framework as drawn from his triarchic theory of Intelligence.

_____. (2006d). Power teaching. Keynote Address. Coastal Georgia Writing Project Conference, Armstrong Atlantic State University, November 10, 2006.

An unveiling of the power teaching framework for an audience of regional teacher consultants in Georgia.

_____. (2007a). Power Teaching. ED494975

Reviews the first five months of the power teaching prototype in construction at an urban, public school in Georgia.

_____. 2007b). Power Teaching in 2054. 28th Ethnography and Education Research Forum, University of Pennsylvania.

Offers an interdisciplinary research problem as context for power teaching and reviews criteria for conducting such research.

_____. (2007c). Power Teaching in 2054. Workshop facilitated at the Urban Sites Conference of the National Writing Project, 21 April 2007 Washington, D. C.

An interactive workshop to explore all the factors of the power teaching prototype and its context in an interdisciplinary problem: By 2054, how might the average class in Seaside City Public Schools exemplify power teaching?

____ / (2007d). Future minds emerging (an interdisciplinary approach to high achievement). In progress curriculum map. Georgia Coastal Writing Project.

Applying the teaching for understanding framework from Harvard University Project Zero Research Center, this curriculum map for a fourth/fifth grade instructional program seeks to develop all five of Howard Gardner's future minds. Thus, it connects the disciplined mind, interdisciplinary mind, respectful mind, synthesizing mind, and ethical mind.

Forman, P. and Saint John, R. (2000). Creating convergence. *Scientific American* (November) 50-56.

Coined a new meaning for the word convergence, namely, two or more digital electronic devices merging to form a new product with uses none of the original devices had alone.

_____.(1999a). *Intelligence reframed: Multiple intelligences for the 21st century*. New York: Basic Books.

Revisiting multiple intelligences theory, the author argued that naturalistic intelligence met his original eight criteria for a given intelligence. In addition, he argued that existential intelligence (the capacity to pose or ponder questions about ultimate realities such as God, love, human purpose etc.) did not fully qualify to become the ninth intelligence.

_____.(1999b). MI approach. In C. Reigeluth (Ed.) *Instructional-design theories and models: A new paradigm of instructional theory*. Mahwah, New Jersey: Lawrence Erlbaum Associates, Publishers.

An application of multiple intelligences to create a simple, yet powerful method for helping students to understand disciplines more deeply, the MI approach stands tall among new paradigm instructional design theories because it rests on a landmark theory not just a collection of studies.

_____.(1998). Melding traditional and progressive perspectives. In M. S. Wiske (Ed.), *Teaching for understanding: Linking research with practice* (pp 345-350).

Taking a performance view of understanding instead of schema perspective, the author argues that understanding might best be understood as a transfer of knowledge from one situation to a situation for which that knowledge is appropriate.

_____.(2004). *Changing minds: The art and science of changing our own minds and other people's minds*. Boston, Massachusetts: Harvard Business School Press.

Applying psychological ideas to the world of business, this book offers a new change theory. The author argues that leaders must consider several specific steps in order to change the minds of others or one's own mind. The steps are as follows: present content and desired content, size of audience, type of audience, directness of change, levers of change, and ethical dimension.

_____. (2006a). *Five minds for the future*. Boston, Massachusetts: Harvard Business School Press..

A breakthrough book, Gardner outlines a vision of how education must serve a 21st century world. Arguing that modern times offer complex problems that threaten existence, a dire need for a different education has emerged. Such an education must develop five future minds in each citizen: the disciplinary mind, the synthesizing mind, the creating mind, the respectful mind, and the ethical mind. Human survival may deepen on this development.

_____. (2006b). *Multiple intelligences: New horizons*. New York: Basic Books.

Gardner reviews and extends his 1983 theory of multiple intelligences.

Grills, C. T. (2004). African psychology. *Black psychology*. (R. L. Jones ed.) Hampton, VA: Cobb and Henry Publishers.

Providing a conceptual framework for the tenets of African Psychology, this chapter in a landmark book, lays a foundation for further reading in the field. In particular, it suggests a new paradigm for viewing wellness—one completing an Anglo Saxon view.

Holliday, C. (2001). Sustainable growth, the DuPont way.

Harvard Business Review (September). 129-134.

Tells how DuPont reframed itself as in the business of sustainability. Sustainable systems find a niche in the culture and grow according the limits of the niche. They add services to become more complex, and they take care of people.

Langer, E. (1989). *Mindfulness*. Reading, Massachusetts: Addison Wesley Publishing Company.

Based on over 50 empirical studies, this book synthesizes the author's research into a theory of mindfulness. Key findings of the studies were these: mindful people welcome new information, create new categories for the information, hold more than one perspective, see life as a process, and can reframe situations.

_____. (1997). *The power of mindful learning*. Reading, Massachusetts: Addison Wesley Publishing Company.

Extending mindfulness theory to the school systems of the nation, this book illustrates ways of teaching children to learn more mindfully. Along the way the author challenges many long held beliefs of educators, thus, helping them to become more mindful as well.

Marzano, R., Pickering, D. and Pollock, J. (2004). Classroom instruction that works: *Research based strategies for increasing student achievement*. Association for Supervision and Curriculum Development.

Offers nine research based strategies for improving student achievement in a companion to the workbook applying the strategies to real classrooms.

Morrison, T. (1996) *The Dancing mind*. Alfred A. Knopf.
A speech delivered at po, Toni Morrison argues that writers and readers form a deep interconnection, one completing the other. She argues further, that beyond formal education, literate people need to read broadly and deeply.

Naisbitt, J. (1983). *Megatrends*. New York: Warner Books.
In addition to introducing the term Megatrends to the world and providing a new way of understanding the future (one based on content analysis and identification of deep trends sweeping the nation), the author introduces the idea that 21st century basic skills are thinking, learning, and creating. These are the new foundations upon which to base developing literacy.

Naisbitt, J. (2006). *Mind Set*. New York: HaperCollins.
Offers 11 mindsets as an aid for thinking about the 21st century. Provides in depth real life examples of how different mindsets combine.

Pearce, J. (2002). *The biology of transcendence: A Blueprint of the human spirit*. Rochester, Vermont: Park Street Press.
Among the first theories to emerge from brain research, Pearce explores “heart intelligence” as a higher order means of directing human behavior.

National Institute for Literacy. (2001). *Put reading first: The research building blocks for teaching children to read*. USA: United States Department of Education.
A summary of a landmark work involving a synthesis of the findings from over 100,000, this book outlines the five pillars for developing early literacy: phonemic awareness, phonics, vocabulary, fluency, and comprehension. Students need a level of mastery in each of these as they learn to read and continue with them as they read to learn. Each pillar exemplifies literacy at work from the inside out—understanding interacting with creating works.

Nobles, W. (2005). Lecture on African Psychology. Howard University.
Introduced the idea of spiritness as the light within human beings.

Perkins, D. (1986). *Knowledge as design*. Hillsdale, New Jersey: Lawrence Erlbaum Associates.
A simple, yet powerful method for metacognition, knowledge as design serves as a tool of reflection for students of all ability levels and ages. This book details ways in which a human made object or idea can be discussed in terms of purpose, structure, model case, and argument (explanatory, evaluative, deep explanatory). In addition, this method for critical and creative thinking invites learners to go beyond the four features and invent one’s own design when the occasion demands.

_____. (1995). *Outsmarting IQ: The emerging science of learnable intelligence*. New York: The Free Press.
Often overshadowed by the more popular multiple intelligences theory, this book presents a new theory of intelligence, namely, learnable intelligence. The author connects three kinds of intelligences: the traditional IQ, experiential intelligence, and reflective intelligence. The author argues that while native intelligence represented in IQ scores once seemed to be immutable, it can change significantly as the learner gains experience in a domain and practices strategies for reflection.

_____. (1998). What is understanding? In *Teaching for understanding: Linking research with practice*. Martha Stone Wiske, editor. Jossey-Bass Inc. San Francisco.

Presenting a new perspective in the cognitive development view of understanding, the author argues that schemas do not go far enough to capture understanding.

From a performance view of understanding, a learner must create an intellectual product to show that understanding and build new understanding.

Perkins, D. and Unger, C. (1999). Teaching and learning for understanding.

In C. Reigeluth (Ed.) *Instructional-design theories and models: A new paradigm of instructional theory*. Mahwah, New Jersey: Lawrence Erlbaum Associates, Publishers.

Presenting Harvard University Project Zero research center's teaching for understanding framework as a new paradigm instructional design theory, the authors argue that effective teaching includes a sound method of planning—one that connects generative topics, throughlines, understanding goals, understanding performances, and ongoing assessments.

Perrone, V. (1998). Why do we need pedagogy of understanding? In *Teaching for understanding: Linking research with practice*. Martha Stone Wiske, editor. Jossey-Bass Inc. San Francisco.

Providing historical context for improving education in the United States, the author argues that few schools teach for power and consequence. Most students do not get the kind of education that leads to literate citizens capable of solving or posing complex problems with created works.

Piaget, J. (1977). *Studies in reflecting abstraction*. Philadelphia: Taylor and Francis Group.

Providing a theoretical explanation of what it means to understand, the authors present a series of studies leading to the invention of a model—the reflecting abstraction model. Beginning with empirical abstraction the model suggests a spiraling succession of understanding at increasingly complex levels. Thus, empirical abstraction, reflecting abstraction, reflected abstraction, and meta-abstraction all explain a performance view of thinking and understanding in learners of all ages.

Reigeluth, C. Ed. (1999). *Instructional-design theories and models: A new paradigm of instructional theory*. Mahwah, New Jersey: Lawrence Erlbaum Associates, Publishers.

A compendium of approaches to teaching and learning, this book offers a range of methods (instructional design theories) to suit most classrooms in the nation.

Richgels, D. (2004). Theory and research into practice: Paying attention to language. *Reading Research Quarterly* 22 (4) 470-477

A review of recent research on language with applications to classrooms, the author presents two categories: formal aspects of language and nonformal aspects. Thus, on the one hand, the author connects research on phonology, morphology, semantics, and syntax. On the other hand, the author explains the role of Halliday's seven functions of language, conversations in language development, and the role of written language in development.

Rossi, P. H., Lipsey, M. W., & Freeman, H. E. (2004). *Evaluation: A systematic approach*. Thousand Oaks, California: Sage Publications.

A comprehensive introduction to the evaluation research field, the author argues that evaluation is both an art and a science. In an age of accountability of social programs, it is imperative to conduct sound evaluations at the level of needs assessment, program process, program outcomes, program effectiveness, and program efficiency.

Senge, P. et al. (2000). *Schools that learn. (A fifth discipline field book for educators, parents, and everyone who cares about education)*. New York: Doubleday.

Senge pulls together insights from his previous business oriented books to apply his ideas about learning organizations to schools. The book also serves as a compendium, pulling together ideas from numerous deep thinkers such as Howard Gardner, Gary House, and Jay Forrester.

Senge, P. et al (2004). *Presence: An exploration of profound change in people, organizations, and society*. New York: Doubleday.

Outlines a systems view of change.

Sternberg, R. (1998a). Principles of teaching for successful intelligence. *Educational Psychologist* 33 (February), 65-72.

Updates his landmark work the triarchic theory of intelligence.

_____. (1998b). Teaching triarchically improves school achievement. *Journal of Educational Psychology* 90 number 3 (September), 74-84.

Extends the triarchic theory of intelligence to specific ways of implementing the theory in to augment student achievement.

Sternberg, R. and po (20po). Thinking Classroom; triarchic theory of intelligence

Provides a comprehensive, yet readable, inside view of a thinking classroom.

Sternberg, R. and Williams, W. (1998). *Intelligence, instruction, and assessment: Theory into practice*. Mahwah, New Jersey: Erlbaum.

Serves as a compendium for new ideas about thinking classrooms.

Hiebert and Stilger (20po). The teaching gap. The Free Press.

Summarizing one of the most comprehensive research projects ever conducted of the TIMMS international assessment, the authors argue that one of the most important findings is that teacher method relates highly with student achievement. Method is the heart of the invention or reinvention of the thinking classroom.

Stoyles, J. and Sagan, D. (2002). *Up from dragons: The evolution of human intelligence*. New York: McGraw Hill.

In plain English, the authors review brain research on the one hand, and evolution theory of human cognitive development on the other. They provide a new longer now of plus and minus 100,000 years of the evolution of the human prefrontal lobe.

Tishman, S., Perkins, D. & Jay, E. (1995). *The Thinking Classroom: Learning and Teaching in a Culture of Thinking*. Boston: Allyn and Bacon.

In brief, this is the Harvard Model for creating cultures of thinking in classrooms, schools, and districts. Based on 245 years of cognitive research and teacher wisdom, the book details how and why 21st century students benefit from the language of thinking, thinking dispositions, mental management, strategic spirit, higher order knowledge, and thinking transfer each benchmarked with four forces of enculturation, namely, model, explain, interact, feedback.

Watzlawick, P., Weakland, J., and Fisch, R. (1974). *Change: Principles of problem formation and problem resolution*. New York: W. W. Norton Company.

An early systems theory view of change with timeless value, the authors suggest two kinds of change. First order change happens when the parts are moved around and, perhaps changed, but the whole remains the same. This is expressed in the proverb “the more things change, the more they remain the same.” Second order change happens when the entire whole changes.

Wiske, M. (1998). What is teaching for understanding? In M. S. Wiske *Teaching for understanding: Linking research with practice*. San Francisco: Jossey Bass.

Providing a somewhat theoretical view of Harvard University Project Zero Research Center’s teaching for understanding framework, the author includes applications to curricula frameworks.

Wolfe, P. (2001). *Brain matters: Translating research into classroom practice*. Alexandria Virginia: Association for Supervision and Curriculum Development.

Collects insights about effective brain based education.

Volk, T. (1995). *Metapatterns: across time and space*. New York: Columbia University Press.

Exploring how a fundamental human shape such as the sphere connects geometric objects and ideas, the author presents an array of novel ways to answer Gregory Bateson’s timeless question: “What is the pattern which connects all the living creatures?”

Born in Atlanta, Georgia and educated at Cheyney University, Temple University, University of Pennsylvania, Harvard University, and Howard University, Jerry Fluellen doubled as a grade teacher and educational psychologist at a performing arts magnet school in Savannah, Georgia. He has served as a university instructor, research center coordinator, teacher consultant, grade school teacher, editor, and writer.